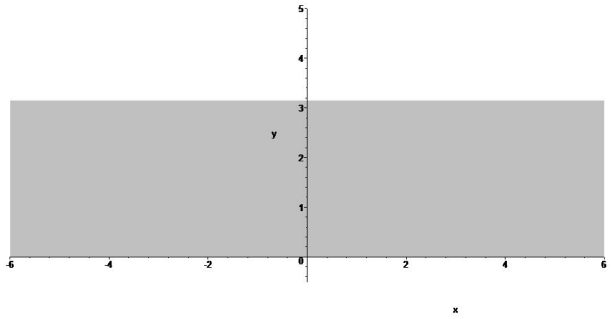
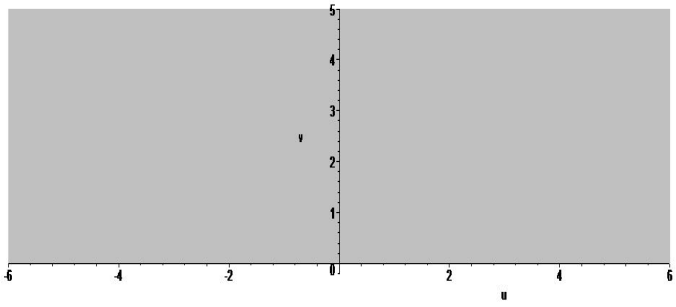
MATH 519 Quiz 3 Name:

Show all work. 5 points each.

1. Let $f(z) = e^z$ show it takes the strip bounded by $y = 0$ and $y = \pi$ to the upper half plane.



2 Find the real and imaginary parts of $f(z)$ and use the fact that Dirichlet problem for the upper half plane (with boundary value below) has the solution $\Phi(u, v) = \dfrac{100}{\pi}\left(\arctan\dfrac{v}{u-1} - \arctan\dfrac{v}{u+1}\right)$ to solve the Dirichlet problem for the region above.



Extra credit: What are the boundary condition for the strip corresponding to those in the upper half plane?